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Examining Temperament in Exercise Dependence and Eating Disorders

James Vongsaroj
California State University, Monterey Bay

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James Vongsaroj
Faculty Mentor: Brian Cook, Ph.D.
Kinesiology Department, CSUMB

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Background

- Over exercise can have serious implications
- 25% - 55% in patients with eating disorders
- Health may be impaired in at-risk individuals
  - 20% - 40% mortality rate – highest of all mental illness
    - Over exercise is implicated in this
- Why do some people exercise too much?

Meyer & Taranis, (2011); Shroff et al., (2006)

Background

- Exercise Dependence (EXD) is defined as when exercise results in physical, psychological, and/or social detriments

Two distinct Variants:

- Primary Exercise Dependence
  - Exercise is the only problem

- Secondary Exercise Dependence
  - Exercise to facilitate other disorders
    - Most often - eating disorders

Hausenblas & Symons Downs, (2002)

Background

- Temperament is an individual's predisposition of self-regulation processes
  - Behavioral Activation System (**BA**)
    - impulsivity and seeking rewarding consequences
  - Behavioral Inhibition System (**BI**)
    - sensitivity to punishment, non-reward, novelty, anxiety, and depression

Carver & White, (1994)

Background & Gap

- Recent research has found
  - **BA** in *elite athletes* with EXD
  - **BI** in *hospitalized inpatients* with eating disorders

My Research Question

Which temperament styles are associated with each EXD variant and eating disorders risk in a *general-population* based sample?

Müller et al., (2015)

Purpose & Hypotheses

- Purpose:
  - To examine temperament styles in EXD and eating disorders risk in a general-population based sample

- Hypotheses:
  - Individuals with eating disorders risk will be associated with **BI** temperament
  - Individuals with EXD will be associated with **BA** temperament

Müller et al., (2015)

Participants

- 880 individuals who completed an online survey
  - Mean age = 28.46+10.13
  - Mean Body Mass Index = 27.29+6.34
  - 63.92% female
  - 66.90% Caucasian
  - 42.41% never married/currently single
  - 29.60% earned a college diploma
  - 60.41% with an annual personal income of <$25k
  - 79.63% were not Hispanic or Latino

Measures

- Demographics Questionnaire

- Exercise Dependence Scale (EDS)
  - 21 Items measured on a 6-point Likert scale
  - Reliability in this study was excellent ($\alpha = 0.95$)

- Eating Disorders Examination-Questionnaire (EDE-Q)
  - 28-item questionnaire evaluating symptoms of an eating disorder
    - Continuous symptom score calculated to determine risk
  - Reliability in this study was excellent ($\alpha = 0.90$)

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Fairburn & Beglin, (2008); Hausenblas & Symons Downs, (2002); Peterson et al., (2007)

Measures

- Leisure-Time Exercise Questionnaire (LTEQ):
  - Self-report questionnaire that assesses 20 minute bouts of strenuous, moderate, and light intensity exercise

- Behavioral Inhibition/Behavior Activation Scales (BIS/BAS):
  - 24 item scale assessing BI & BA
  - BAS subscales – Drive, Fun Seeking, & Reward Responsiveness
  - Reliability in this study was good for the BIS ($\alpha = 0.81$) and BAS ($\alpha = 0.86$)

Carver & White, (1994); Godin & Shepard, (1985)

Procedures

- Reviewed and approved by IRB
- Informed consent collected prior to completing an online survey
- Participants were grouped as:
  - Regular exercisers (e.g., LTEQ > 24.00)
  - Primary EXD (e.g., EDS > 77.00 & EDE-Q < 2.98)
  - Secondary EXD (e.g., EDS > 77.00 & EDE-Q > 2.99)
  - Eating disorders risk only (e.g., EDS < 77.00 & EDE-Q > 2.99)

Statistical Analyses

One-Way ANOVA

- Overall group differences
  - Tukey Post Hoc analyses were conducted to examine individual group differences

- Dependent variables – BIS & BAS scores (continuous)
- Independent variables – Groups based on LTEQ, EDS, & EDE-Q scores (categorical)

ANOVA Results

	Regular Exercisers M(SD)	Primary Exercise Dependence M(SD)	Secondary Exercise Dependence M(SD)	Eating Disorders Risk Only M(SD)	ANOVA df	ANOVA F	ANOVA η^2
BIS	19.21 (4.16)	19.40 (4.25)	18.83 (4.01)	21.90 (4.15)	3, 841	27.13*	.088
BAS	39.27 (6.00)	39.62 (8.37)	37.25 (7.67)	39.50 (6.41)	3, 830	1.52	.005
BAS-Drive	11.16 (2.50)	11.70 (2.97)	10.79 (2.35)	11.02 (2.72)	3, 850	0.87	.003
BAS-Fun	11.44 (2.40)	11.56 (2.74)	11.20 (3.01)	11.67 (2.56)	3, 852	0.78	.003
BAS-Reward	16.68 (2.57)	16.35 (3.67)	15.20 (3.61)	16.89 (2.74)	3, 850	4.76*	.017

Table 1: Groups means for study outcomes and ANOVA results.

NOTES: BIS = Behavioral Inhibition Scale; BAS = Behavioral Activation Scale; *M*(SD) = Mean (Standard Deviation); df = degrees of freedom; * = $p < .001$; η^2 = effect size.

Post Hoc Analyses Results

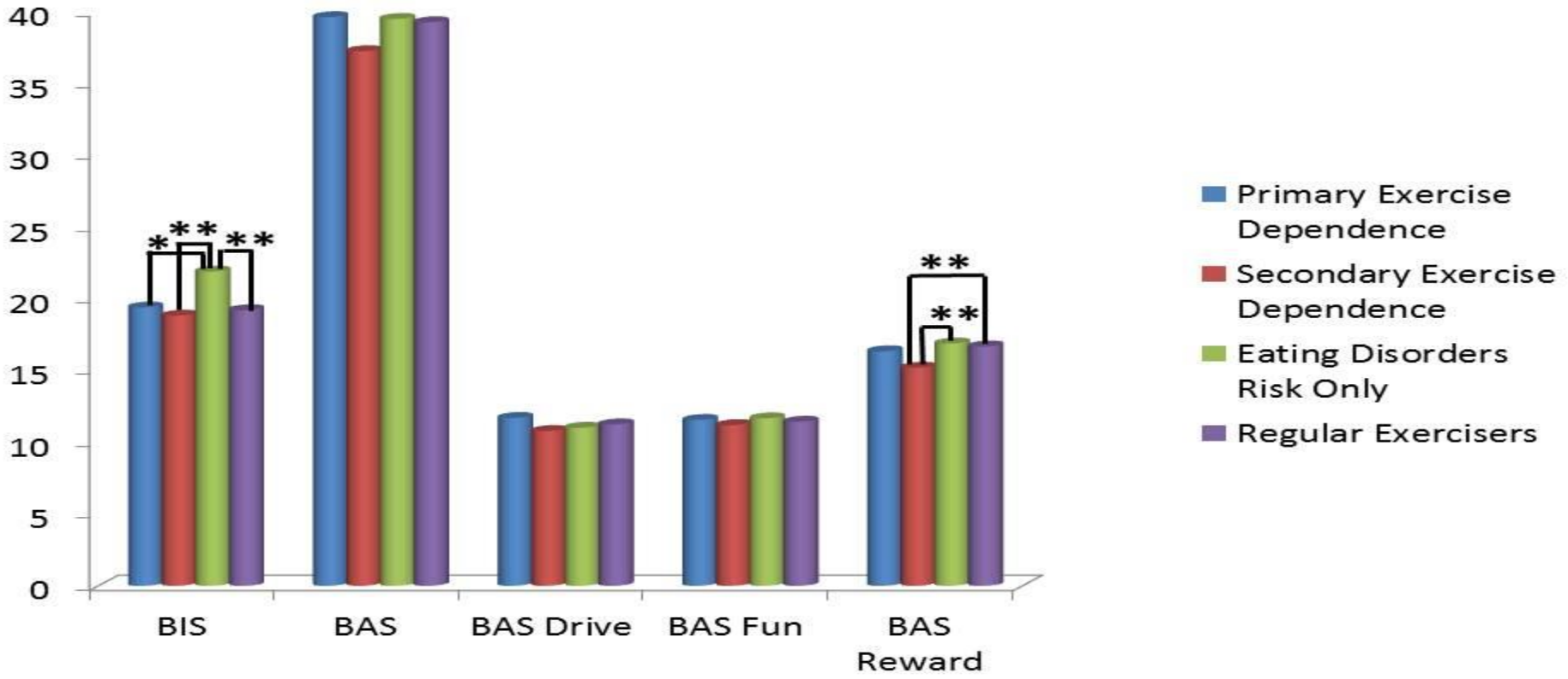

Figure 1: Group differences for Behavioral Inhibition and Behavioral Activation Scales
NOTE: BIS = Behavioral Inhibition Scale; BAS = Behavioral Activation Scale;
* = $p < .05$; ** = $p < .01$

Discussion

- Key Findings!!
- Hypothesis 1 – BI & eating disorders risk
    - **Supported!**
        - **–Eating disorders risk only group reported highest scores in overall BIS**
- Hypothesis 2 –BA & exercise dependence
    - **Partially Supported!**
        - **–BAS Reward subscale only showed significant differences**

Discussion

- General-population sample

- Provides new insights on temperament styles
  - Secondary EXD lowest BAS Reward
    - Exercise & eating disorder risk – may not be rewarding

- Temperament styles may be more heterogeneous than previously thought
    - More research needed on reward systems

Meyer & Taranis, (2011): Müller et al., (2015)

Limitations

- Cross-sectional design
  - Can't prove cause and effect
- Self-report measures - limits accuracy of assessments
  - No clinical diagnosis
    - EXD or eating disorders
  - No objective assessments of physical activity

Conclusions

- BAS may be more complex than previously reported

- Clinical implications
  - A person's temperament may explain ***why*** they exercise
    - Tailor interventions to match temperament style

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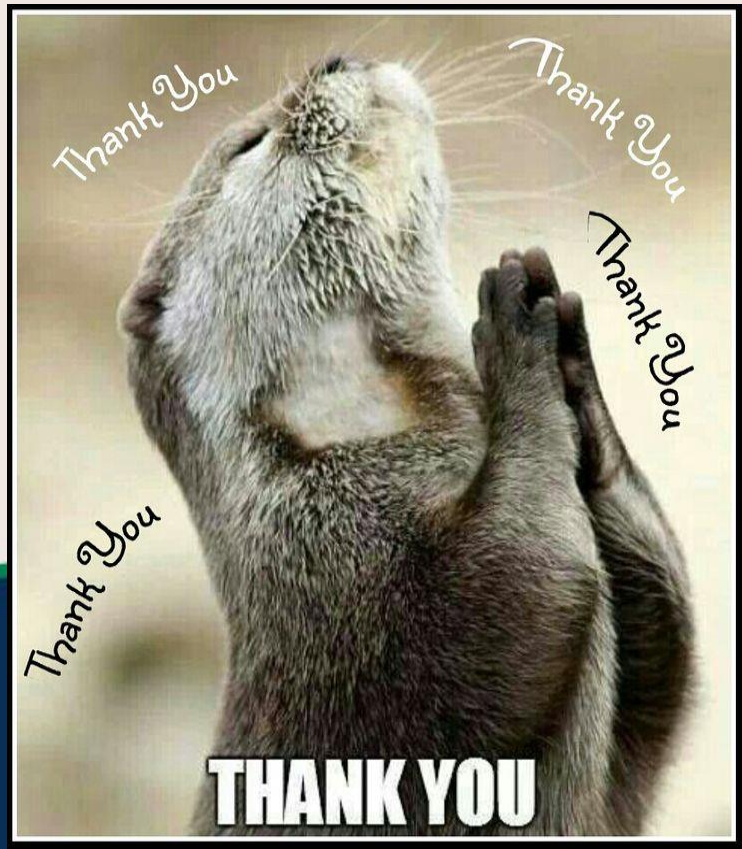

Questions?

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